

## THE DYNAMICS OF ENTREPRENEURIAL OUTPUT AND ECONOMIC GROWTH IN NIGERIA

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### Abstract

*In this study we test the degree of impact that economic growth, the rate of unemployment, capital performance and the lagged values of entrepreneurial output exhibit on the present value of entrepreneurial output in an autoregressive distribution lag (ARDL) model. Quarterly data from 1980 to 2018 was used for this study. The objective of this study is to evaluate the extent to which entrepreneurial output is a critical component of economic growth in Nigeria, taking into consideration its short-run and long-run impact on capital performance and the rates of unemployment. We noticed that changes in the rates of growth in the economy did not encourage entrepreneurial output growth in the short-run and long-run. On the long-run, persistent increase in entrepreneurial output growth curtailed the high and steadily growing rates of unemployment despite the fact that such entrepreneurial output growth levels are not directly linked with the prevailing levels of growth in the economy. Also, capital performance was more effective in contributing to entrepreneurial output growth in the short-run than in the long-run. The results obtained from the empirical evaluation in the study have implications for entrepreneurs, policy makers and researchers.*

**KEYWORD:** Economic- Growth, Econometric- modeling, Firm, Production, Microeconomics.

### 1. Introduction

Contemporary economic ideology strongly holds the view that capitalism is unmatched when it comes to innovation and economic growth (Scherer, 2010; Baumol, Guaranino & Iacopetta, 2003; Baumol, 2002). This view highlights the intricacies between entrepreneurial output, knowledge, innovation, employment and economic growth (Karlsson, Friis & Paulsson, 2004; Baumol, 1993). But the fact remains that the influence that this key variable exerts over the others has not been comprehensively studied (Parker, 2005). Theoretically, it is widely accepted that innovation is central to economic growth (Afolabi, 2015; Dejardin, 2000; Baumol, 1993). Generally, it is agreed that innovation rely majorly on externalities.

Endogenous growth literature asserts that innovation and human capital are essential in the production process such that positive externalities attributed to cost from other firms subsequently lead to growth. Also they emphasize that the marginal production of capital which tends towards zero implies that the production levels of firms considering their size may conversely be determined in the light of the marginal product of capital which may diminish in intense competition (Wennekers & Thurik, 1999; Kirzner, 1973). This indicates that institutions which comprehend open policies guided by competitive strategies, focused on change and innovation will drive growth. Consequently, economic growth becomes a process of continuous transformation.

Nigeria is endowed with vast human resource potentials, 85 percent of its population is within the working age bracket. Statistics states that this valuable resource is not properly harnessed (National Bureau of Statistics (NBS), 2009). This economy has a viable labour force, a growing pollution and a large wealth of nature resource, but innovation in firms output is on a low scale. Although growth has been largely consistent, it is basically driven by petrol chemical exports and agriculture (Central Bank of Nigeria (CBN), 2007). For government to channel excess labour into productive ventures, it has put in place entrepreneurship skill incubation centers' to train young aspiring entrepreneurs, envisaging that this will in turn mitigate the employment difficulties and lead to economic growth, through innovations. The main objective of this study is to evaluate the extent to which entrepreneurial output is a critical component for economic growth in Nigeria, taking into consideration its short run and long run impact on capital performance and the rates of unemployment. We anticipate that it will add to the existing empirical literature on entrepreneurship and economic growth, from a developing country perspective.

The study is structured as follows, section two explore theoretical and empirical literature on entrepreneurship and economic growth in other to build a fundamental framework for our model and estimation process. In section three we specified and estimated a dynamic model using the autoregressive distribution lag statistical technique. Section four reveals the outcomes of the estimation process in the various stages, described in the model specified in section three, while section five is the conclusion.

## **2. Literature Review**

This section discussed theoretical and empirical literature on entrepreneurial output and the way its impact influences innovation, employment and economic activities. These issues were linked by fundamental concepts association with entrepreneurial development, risk and economic uncertainties. Basically, most of these were empirically tested and their results had relative inference on entrepreneurship as a major key to growth (Ifionu & Akinpelumi 2017; Afolabi, 2015).

### **Entrepreneurship and Economic Growth**

Entrepreneurship involves identifying business opportunity, committing capital into same and the assumption of risk with the intent to make wealth through the use of labour (Donwa, 2010). She suggested that entrepreneurship has positive implication for economic development as it is a good avenue for employment and wealth creation as well as poverty reduction. Therefore, an entrepreneur can be viewed as an individual who is willing to take the risk of committing capital, labour and other resources into a business opportunity in order to attain wealth. Karlsson, Friis & Paulsson (2004) defined entrepreneurship as a set of economic activities in which the proprietors are bearers of uncertainties, resource allocators and innovators. They affirmed that this definition is theoretical and an operational perspective views entrepreneurial activities as a collection of productive ventures that are geared towards meeting the needs of the society so that such organizations can make profit (Dejardin, 2000; Baumol, 1993).

Although in earlier literatures, most scholars seek a narrow divide between these definitions but with more emphasis on a unique type of economic agent seeking to earn profit by manufacturing a variety of commercially viable products which are essential for the domestic market consumption. They insisted that these agents bear the risk in the venture. For this reason, through innovation these agents establish risk focused market expansion strategies so as to increase their market share and returns on investments. Over time, this process in turn drives the economy to an anticipated level of growth (Vosloo, 1994; Kirzner, 1973; Schumpeter, 1934; Knight, 1921; Cantillon, 1755).

It is widely held that entrepreneurial activities, enhanced competition, innovations, and employment growth through the quest for innovation driven by the need for profit (Wennekers & Thurik, 1999). Most empirical entrepreneurship and growth models analysed, are positively related in the industry level. Basically their findings reveal that knowledge spillovers drive economies and subsequently lead to a consistent increase in economic growth levels (Karlsson, Friis & Paulsson, 2004).

### **Entrepreneurship and Unemployment**

Unemployment as defined by ILO (2007) is increasingly seen as inadequate to characterise low income countries labour market (World Bank, 2006; ILO, 2006). The human development indicator index (HDI) for Africa in 2008 states that unemployment rate in countries with widespread poverty may be misleading because most unemployed youths cannot afford to be unemployed (United Nations Development Program (UNDP), 2008). In 2016 international statistics disclosed that that socio economic development of certain groups in the society suffer disadvantages than others, as a result of deep rooted and often unmeasured barrier to economic growth (UNDP, 2016). In 2018, trends from human development report reflect the fact that governmental policies should project the freedom to realize the full potentials of human life by eliminating barriers to universalism, deprivations, inequalities, discrimination and exclusion. It advocates empowerment and equal opportunities to attain full Then, difficulties in labour market are better reflected by measures of quality of employment or measures of underemployment (UN, 2007). For this reasons, policies on labour issues may have limited impact due to the large informal sector and strong dominance of rural population in low income countries. To justify this view, Cowling and Bygrave (2002) insisted that unemployment will be higher where other alternatives in the labour market are low. The Nigerian National Bureau of Statistics report (NBS 2007; 2009) states that the manufacturing and production sector, hotel, building and construction, restaurant and tourism, Health, communication and transportation employed a total of

1.005 million to 2.1 million people between 2007 and 2009. This index stated clearly that most of these ventures were entrepreneurial outfits.

Cowling and Mitchell (1997) study disclosed that in most cases, being self-employed is a last resort for young individuals in the short-term. But in situations where the years the individual remain unemployed are lengthy, the possibility of getting paid employment becomes uncertain and staying self-employed becomes a last resort. From these facts we deduced that entrepreneurship is a covert to wean the unemployed. Relatively, Donwa (2010) stated that entrepreneurship depicts empowerment, since it is also a means for poverty alleviation and job creation or employment. Employment on the other hand, depending on what level reduces poverty, economical, social and political powerlessness. Therefore, the dependence on government as a major employer of labour has become a thing of the past in many economies. Nigeria has long recognized the importance of a private sector driven economy. In an effort to ensure self employment as well as increase job opportunities and alleviate poverty, government has encouraged entrepreneurship development. In line with government effort to encourage entrepreneurship and reduce unemployment, there are numerous skill acquisition centres set up all over the country where training is provided to enable participants set up enterprises (Ifionu & Akinpelumi, 2017; Donwa, 2010).

Toivanen (2009) carried out a study that proposed that persistent increase in population, unbalanced skills, inefficient labour and untapped potential working class in the population are key factors that impedes entrepreneurial productivity and economic growth. Therefore, unbalanced skilled labour and untapped potential working class persist in the Nigerian economy and it is a potential force against the level of progress in entrepreneurial efficiency and growth. Also, Wei and Zhang (2011) conceived that for such excess useful resource to be put to use policy makers have to put in place an efficient mechanism to encourage entrepreneurship, local industrial based manufacturing, domestic private firms driven by world class ideology, technology and outstanding innovations of international repute. It is suggested that this phenomenon will spur economic growth in the long-run. From these views it is important to note that entrepreneurship that is linked with innovation can be fostered and it seems to hold the key to economic prosperity and growth (Afolabi, 2015). Donwa (2010) policy makers should use the educational system as an avenue to harness individuals with the requisite skills; for government policies to become viable.

### **Empirical Literature**

With insights from the Solow (1956) economic growth model, that was framed as a CRS production function in which output is a function of capital and labour efficiency. It implied that the specified rates of output will most likely influence the rates of capital or the levels of labour efficiency over a specified period depending on the range of increase in rates of output. From his finding this assumption would have been justified if the rate of innovation that led to technological progress expanded rapidly. Although he affirmed that the subsequent accumulation of funds may not necessarily generate the desired levels of growth in the economy. In this wise, entrepreneurs create opportunities through innovation, these changes open new ideas for other entrepreneurs such that they generate more funds and returns to investment in the process despite the levels of uncertainties.

Parker (2005) proposed that since variables evolve as independent random walks over time, regression analysis can wrongly suggest that they are significantly related. For a comprehensive study on entrepreneurship, to determine the effects of temporal variations in government policies and macroeconomic factors, their impacts cannot be identified using static cross-section data, time series data are preferred. Further, he insisted that to avoid this problem, and the danger of making incorrect inferences, it is essential to use the cointegration estimator.

Comparing facts in the US and Spain, using a dynamic measure to evaluate changes in the cyclical components of time series in order to induce permanent changes in the 'nature' of the specified series and justify if hysteresis is equal over time. Subsequently, they put mechanisms in place to find out if entrepreneurship evolves as a trend stationary or as a non-stationary time-series process (Congregado, Glope & Parker, 2009). In their model entrepreneurship is trend stationary, where economic and policy shocks can be regarded as transitory. They suggested that the expected rate of entrepreneurship output may revert to its underlying, long-run ("natural") rate. Consequently, the stated "natural rate" may not be stable over time. In this case, structural breaks were introduced to instil stationarity. Further they proposed that where the rate of entrepreneurship is trend-stationary, the anticipated entrepreneurship policy shocks will have temporary effects. But where the rate of entrepreneurship is non-stationary, the expected entrepreneurship policy shocks will have permanent effects. With these view at hand,

they captured the durability of shocks to entrepreneurship both as policy shocks and economic shocks. While policy shocks, represented as changes in government policies and economic shocks, was measured by changes in technology. Congregado, Glope and Parker (2009) disclosed that business cycle output variations significantly affect future rates of entrepreneurship output. For this reason, entrepreneurship may exhibit traces of macro dynamic structure in which cyclical fluctuations have persistent effects on the nature of the entrepreneurship. Also, Wennekers and Thurik (1999) expressed empirically that entrepreneurial activities could be linked to economic growth through competition, firm expansion strategies and innovation.

### 3. Research Methods

#### Model specification

Most literatures state that entrepreneurial output is a product of the sophistication of employees and innovation. These impacts on productivity, growth and improved business techniques due to higher quality of innovation which accounts for a reasonable percentage of gross domestic product (GDP). But all these would not be possible without an efficient capital system. Some empirical studies have examined the effects of entrepreneurship and economic growth from different perspectives. They proposed unique theoretical frameworks and obtained empirical results that had substantial evidences which have implications for the link between the microeconomic influence on these macroeconomic variables and the way it impacts on economic growth.

We specified a dynamic autoregressive distributive lagged (ARDL) model for this study in order to consider the lag effect of the variables specified and detect their impact on entrepreneurial output over the observation. The main advantages of this estimation technique is that it can be applied irrespective of the fact that the regressors are I(0) or I(1) and it could be used to test for cointegration in models with I(1) exogenous variables (Pesaran, Shin & Smith, 1996; Pesaran & Shin, 1995). For this reason, the pretesting problems associated with standard cointegration analysis could be relegated.

The basic model adopted in this study considers the dynamic view of entrepreneurship as it relates to growth in the Nigerian economy. Therefore, an analysis will be carried out on the impact of entrepreneurship output on economic growth, there lagged values, capital performance and unemployment.

Essentially, the functional form of the model for the study is;

$$ETPO = f(CAPP, ECOG, UNER) \quad - \quad - \quad - \quad - \quad (3.1)$$

Expressing the function in 3.1 in equation form, the model becomes;

$$ETPO_t = a_0 + a_1ETPO_t(-1) + \dots + a_4ETPO_t(-4) + a_5CAPP_t + a_6ECOG_t + a_7UNER_t + a_8U_t \quad - \quad - \quad - \quad (3.2)$$

Where:  $a_0$ =Intercept, ETPO=Entrepreneur output growth, ETPO(-1)...ETPO(-4)=First to fourth period lagged values of entrepreneur output, this lag value was obtained from the results of the lag length criterion test selected by the Schwarz Bayesian criterion, CAPP=Capital Performance, ECOG=Economic Growth, UNER=Unemployment Rate,  $U_t$ = Stochastic Error Term.

The proposed a priori expectations as emphasized by in the theoretical literatures are;  $a_1 \dots a_4 > 0$ ,  $a_5 > 0$ ,  $a_6 > 0$  and  $a_7 > 0$ .

#### Co-integration Test

In order to estimate the model, we tested for unit root in the series in order to determine the order of integration in the variables and examine them for co-integration. This was done to carry out a detailed investigation of the research question in accordance with the hypothesis to achieve a stable result. Both the Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) unit root test were used to determine the order of each series. The DF test is based on equation 3.3 as follows:

$$\Delta ETPO_t = a_0 + a_1CAPP_t + \dots + a_6ECOG_t + U_t \quad - \quad - \quad - \quad 3.3$$

Formulating the null hypothesis of unit root, the coefficient of  $aECOG_t$ , will not be statistically different from zero (i.e.  $a=0$ ). If there is a unit root, the series  $aECOG_t$  is said to be integrated of order zero (denoted by  $I(0)$ ). If there appear to be a unit root, and if, differencing the series once makes it stationary, then it may be said that the series is integrated of order one (denoted as  $I(1)$ ) (Pasaran, Shin & Smith, 1996; Gujarati & Porter, 2009).

Therefore, the ADF test will be based on equation 3.4 as presented below:

$$\Delta ETPO_t = a_o + \sum_{i=1}^n C_i ETPO_t + a_1 CAPP_t + \dots + a_6 ECOG_t + U_t \quad - \quad - \quad - \quad 3.4$$

The null hypothesis of non-stationarity is rejected if the t-statistic is less than the critical t-value (i.e. if estimated is significantly negative) (Charemza & Deadman, 1997). Detailed analysis of co-integration and error correction mechanisms were given in the following articles (Philips & Loretan, 1991; Engle & Granger, 1991, 1987; Hylleberg & Mizon, 1989). Therefore, these forms of models are a perfect mix of economic theory relating to the long-run relationship between variables and short-run disequilibrium behaviour.

### The Error Correction Model (ECM) of Entrepreneur Output and Economic Growth in Nigeria

Fundamentally, first we carried out a test against the null hypothesis that the residuals of the long-run model are non-stationary. Then, the application of the DF and ADF test to the residuals of the static co-integration regressions is essential. If it becomes evident that the residuals are stationary, it means that the variables in the model are indeed co-integrated. The expected short-run model, which will be considered by the ECM, in this may be expressed in this form:

$$\Delta ETPO_t = a_o + a_1 L(\Delta \varpi) - a_2 ECM_{t-1} + U_t \quad - \quad - \quad - \quad 3.5$$

#### Where

$\varpi$  = the vector of the variable that co-integrated with the growth levels of entrepreneur output.

L = the general lag operator

ECM = a representation of the time series of residuals from the co-integrating vector.

Equation 3.5 incorporates a corrective mechanism, through which previous disequilibria in the relationship between the levels of growth in entrepreneur output and the levels of one or more of its determinants are permitted to affect the current change in the levels of growth in the Nigeria economy. This indicates that a form of allowance is permitted for any short-run divergence in levels of growth in entrepreneur output from its long-run levels. The acceptance of the ECM implies that the model is best specified in the first differences of its variables. Essentially, the application of the co-integration method will guard against the loss of information from the long-term relationship in the first difference. Then, the final estimated equation should be in this form:

$$a\Delta dETPO = a_o + a_1 \sum_{i=1}^4 \Delta dETPO_{t-i} + a_2 \Delta dCAPP + a_3 \Delta dECOG + a_4 \Delta dUNER + a_5 ecm + U_t \quad - \quad (3.6)$$

The ecm is the error correction variable whose coefficient should be negative and statistically significant to support the existence of co-integration. Its value defines the feedback mechanism amongst the co-integrating variables.

### 4. Empirical Result

The quarterly data used in this research were taken from the Annual Report and Statement of Accounts of the Central Bank of Nigeria (CBN) 2017, the CBN Statistic Bulletin 2018, 2016 and the National Bureau of Statistics Bulletin 2018, for the period 1980 to 2018.

#### Unit Root Test for the Variables

To test for the presence of the co-integrating relationships among the variables specified in the model, we begin by considering the characteristics of the time series data employed in the study. This is achieved by using the unit root test to determine the order of integration of each series using the Dickey Fuller (DF) and Augmented Dick Fuller (ADF) sets of unit root test.

**Table 4.1: The Result of the Unit Root Test**

Variable	D.F. Test	A.D.F. Test	Critical Value	Order of Integration
ETPO	-12.7620 (-12.7224)	-10.0357 (-9.9113)	-3.4491 (-2.8865)	I(0) I(0)
CAPP	-9.7400 (-9.7890)	-6.1106 (-6.1591)	-3.4491 (-2.8865)	I(0) I(0)
ECOG	-15.6655 (-15.7816)	-17.7981 (-18.0268)	-3.4491 (-2.8865)	I(0) I(0)
INER	-4.4809 (-3.4465)	-4.9001 (-3.6556)	-3.4491 (-2.8865)	I(0) I(0)

Source: Authors estimation, Microfit 4.1 September 2018

Note: \*Values in parenthesis are for test without trend. \*Critical values for the Dickey Fuller Test is at 95% confidence interval

From the result of the unit root test above, it was noticed that all the variables were virtually non-stationary at levels. This means that all the variables are stationary, which indicates they are of the I(0) series. This is because the computed statistics are greater than the critical values of -3.4491, for test with an intercept and a trend and -2.8865 for test with intercept but not a trend respectively. This shows that the model can be specified dynamically at the levels of the series as the regression results, since they are not likely to be spurious (Admans, 1992).

**Table 4.2: Unit Root Tests of the Residuals of ETPO on the Regressors**

Variables	Dickey Fuller Test	Augmented Dickey Fuller Test	Critical Value	Co-integration
ETPO on CAPP, ECOG, UNER	-13.2122	-10.7806	-4.1942	Accept

Source: Authors calculation, Microfit 4.1September 2018

Table 4.2 above present the result of the unit root test for the residuals. The Dickey Fuller Test (DF) and the Augmented Dickey Fuller Test (ADF) Shows that there is a long-term equilibrium relationship between changes in the growth of entrepreneur output and its arguments i.e. CAPP, ECOG, UNER at their levels. Consequently, an error correction representation for the selected ARDL model was specified and estimated.

Based on the ARDL(2, 0, 0, 1), which was selected on the basis of Schwarz Bayesian criterion, the result of the long-run equation, and the short-run parsimonious ETPO model estimate is reported in Table 4.3 and Table 4.4 respectively.

**Table 4.3: ARDL (2, 0, 0, 1) Long-run estimates selected based on the Schwarz Bayesian Criterion**

Variable	Coefficient	T-Ratio	P-Value	Significance level
CAPP	0.01616	1.8311	0.070	
ECOG	-0.13888	-1.9807	0.050	
UNER	0.02564	1.2874	0.201	
C	5.1552	7.5551	0.001	*

Source: Authors estimation, Microfit 4.1 September 2018

Note: \* means statistical significance at the 1 percent level.

From table 4.3, it can be viewed that the expected average of entrepreneur output growth is about 5.16 per change in the other variables in the model, although this has implication for growth. This means that there is practically a five quarter relationship between ETOP and ECOG and that ETOP adjust to its long-run growth path with time following a disturbance.

**Table 4.4: ARDL (2, 0, 0, 1, 0) Error Correction Representation Selected based on the Schwarz Bayesian Criterion**

Variable	Lags	Coefficient	T-Ratio	P-Value	Sign level
dETPO	1	0.92906	4.4118	0.007	***
dCAPP		-0.0239	1.8614	0.065	
dECOG		-0.2054	-2.1008	0.038	
dUNER		-0.0701	-1.5194	0.132	
dC		7.6250	6.2952	0.000	*
Ecm	1	-1.4791	-10.435	0.000	*
R-Square	0.67				
R-Bar Square	0.65				
F-Stat.(5, 108)	42.83			0.000	*
D.W Stat.	2.16				

**Source:** Authors estimation, Microfit 4.1 September 2018

**Note:** \* means statistically significance at the 1 percent level, \*\* 5 percent and \*\*\*10 percent respectively.

To obtain a better result the researcher probe further by seeking to find the ‘equilibrium error’ by tying the short-run behaviour of entrepreneur output growth to its long-run value and relating the changes in entrepreneur output growth to changes in the CAPP, ECOG, UNER and the ‘equilibrating error’ in the previous periods.

Therefore, the result shows that the short-run changes in entrepreneur output growth has a significant effect on ECOG and other variables in the model to about 1.48 of the discrepancy between the actual and long-run or equilibrium value of the rate of growth is eliminated and corrected each quarter.

#### Discussion of findings

- (i) Entrepreneurial output growth lag one period, has a positive impact on the present levels of entrepreneur output growth. This variable passed the test of statistical significance at ten percent. This shows that the lagged values of entrepreneurial output growth projects and stimulates subsequent levels of growth in the sector. Since a unit change in one quarter lagged entrepreneurial output lead to 0.24 unit increase in the present growth levels of total entrepreneurial output growth in the economy.
- (ii) The capital performance variable also has a positive impact on the levels of entrepreneurial output growth. This indicates that an increase in total entrepreneurial growth as a result of a unit change in total capital disbursed to this sector to fund and expand investment projects and support innovation does not influence entrepreneurial output growth. Although this impact negative is not statistically significant, it shows that capital allocated to this sector should be modified to meet specific needs that will enhance activities in this sector and in turn lead to the desired growth in economic output.
- (iii) The economic growth variable indicates that a unit change in rate of growth in the economy may have a negative impact of approximately 0.21, on the present level of growth in entrepreneurial output in the economy. This is not a good sign, it shows that policies put in place to improve the other sectors of the economy, impinge on the activities of entrepreneurs and this in turn mitigate the levels of growth in this sector.
- (iv) The unemployment variable has a negative impact on the present levels of growth in entrepreneurial output. Although this variable is not statistically significant at the one, five and ten percent levels, it shows that a unit increase in the rates on unemployment will bring about a 0.07 unit decrease in entrepreneurial growth. This implies that the present range of entrepreneurial activities those not have enough provision to make sufficient room for activities that will enhance innovation in this sector and open up entrepreneurial activities to link up with other key sectors of the economy such that more unemployed citizens may be integrated into the process.
- (v) The Error Correction Mechanism (ecm) coefficient had the expected negative sign and its result indicate that the model passed the test of statistical significance at the one percent level. Therefore, the error correction mechanism of entrepreneur output growth as it relates to economy growth as shown by the ecm coefficient is quite fast, since it suggest that it will take about 1.5 quarters which is approximately four month and five days. This implies that entrepreneurial output growth reverts back

- to its long-run equilibrium path quickly. It is necessary to note that the coefficient of the ecm captures the short-run impact which is tied to the long-run relationship between co-integrating variables through the feedback mechanism.
- (vi) The result of the summary statistic shows that the model has a reasonably good fit. The  $R^2$  value of 0.68 shows that over 65 percent systematic variation in entrepreneurial output growth is explained by the model.
  - (vii) In support of the  $R^2$  value is the F-statistics value of 42.83 which easily passed the test of statistical significance at the 1 percent level. Indicating that all the slope coefficients are simultaneously significantly different from zero.
  - (viii) The D.W statistic value of 2.16 which is approximately 2 implies that the model is free from the presence of first order serial correlation. Overall, the model has a very good fit and can be used to draw serious conclusions on the impact of entrepreneur output growth on the rate of growth in the Nigerian economy, taking into consideration the rate of capital performance in this sector and the prevailing rate of unemployment in the economy during the period under investigation.

## 5. Conclusion

In this study, we adopted an autoregressive distribution lag model (ARDL) in order to investigate the short-run and long-run relationship of entrepreneurial output and growth in the Nigeria economy. To do this effectively, variables such as capital performance and the prevailing rates of unemployment over the observation were added to the estimation process. The test of the unit root test revealed that the variables were stationary at levels. To estimate the short-run behavior of the entrepreneurial output growth, we related this to the long-run values and associate it with the changes in other variables in the model to successfully evaluate the 'equilibrating error' in the previous periods.

It was detected that the short-run changes in entrepreneurial output growth has a significant effect on economic growth and about 1.5, of this discrepancy between the actual and long-run equilibrium value of investment is corrected for each quarter. With this view in focus, it was noticed that the one period lag in entrepreneurial output growth and capital performance impacts were most effective in the short-run. This result shows that entrepreneurial output growth was influenced negatively by economic growth in the short-run. The ecm variable was highly significant at the one percent level.

On the long-run, the entrepreneurial output growth and economic growth did not maintain consistent flow of impacts, as entrepreneurial output growth tried to adjust to its long-run growth path, considering macroeconomic disturbance from other variables in the model. Due to this fact, capital performance showed weak positive evidence and unemployment rates were effective on the long-run, in the light of entrepreneurial output growth. Subsequently, to strengthen capital performance deficiency in the long-run, the monetary authority in accordance with the banking system should put in place favourable policies which will make the lending rate for entrepreneurship innovation flexible such that the state rates will suite a long-run average the is business friendly, which is mainly driven by the degree of progress in the business environment.

These sets of facts derived from the empirical results should be taken seriously, since the model has a reasonably good fit. Consequently, policy makers should put strategies to foster entrepreneurial output growth, by developing innovative facets of entrepreneurship in order to link them to the key sectors of the economy.

From the study, in accordance with the literature, other area of interest will be to find out if causal relationships exist between, entrepreneurship and capital performance, entrepreneurship and economic uncertainties, and entrepreneurship, unemployment and government policy.

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